

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Withdrawn) A display device comprising:

a plurality of pixel portions each comprising a first active device and arranged in matrix and each having a pixel electrode over a substrate;

a plurality of sensor portions each comprising a second active device and arranged in matrix over said substrate;

a pixel gate signal line side driver circuit for driving the first active device; and

a driver circuit for driving the second active device,

wherein said pixel electrode comprises a first layer and a second layer, said second layer provided over said first layer,

wherein one of said first layer and said second layer of said pixel electrode comprises a reflecting material,

wherein the other of said first layer and said second layer of said pixel electrode comprises a light-transmitting material, and

wherein each of said sensor portions includes a photo-electric conversion device, and can read information by utilizing the rays of light transmitting through said light-transmitting material when an external image is read.

2. (Withdrawn) An apparatus according to claim 1, wherein at least one of said first active device and said second active device comprises a bottom gate type TFT.

3. (Withdrawn) An apparatus according to claim 1, wherein at least one of said first active device and said second active device comprises a top gate type TFT.

4. (Withdrawn) A display device comprising:

a plurality of pixel portions each comprising a first active device and arranged in matrix and each having a pixel electrode over a first substrate;

a plurality of sensor portions each comprising a second active device and disposed in matrix over a second substrate opposed to said first substrate;

a pixel gate signal line side driver circuit for driving the first active device; and

a driver circuit for driving the second active device,

wherein said pixel electrode comprises a first layer and a second layer, said second layer provided over said first layer,

wherein one of said first layer and said second layer of said pixel electrode comprises a reflecting material,

wherein the other of said first layer and said second layer of said pixel electrode comprises a light-transmitting material, and

wherein each of said sensor portions has a photo-electric conversion device, and can read information by utilizing the rays of light transmitting through said light-transmitting material when an external image is read.

5. (Withdrawn) An apparatus according to claim 4, wherein color filters are disposed on said second substrate.

6. (Withdrawn) An apparatus according to claim 4, wherein at least one of said first active device and said second active device comprises a bottom gate type TFT.

7. (Withdrawn) An apparatus according to claim 4, wherein at least one of said first active device and said second active device comprises a top gate type TFT.

8. (Withdrawn) A display device comprising:

a plurality of pixel portions each comprising a first active device and arranged in matrix and each having a pixel electrode over a substrate;

a plurality of sensor portions each comprising a second active device and arranged in matrix over said substrate, wherein each of said sensor portions has a photo-electric conversion device, and at least a part of said photo-electric conversion device is extended in such a manner as to overlap with said active device;

a pixel gate signal line side driver circuit for driving the first active device; and
a driver circuit for driving the second active device,

wherein said pixel electrode comprises a first layer and a second layer, said second layer provided over said first layer,

wherein one of said first layer and said second layer of said pixel electrode comprises a reflecting material, and

wherein the other of said first layer and said second layer of said pixel electrode comprises a light-transmitting material.

9. (Withdrawn) An apparatus according to claim 8, wherein at least one of said first active device and said second active device comprises a top gate type TFT.

10. (Previously Presented) A display device comprising:

a plurality of pixel portions each comprising a transistor and arranged in matrix over a substrate;

a plurality of sensor portions arranged in matrix over said substrate and comprising an upper electrode and a lower electrode and a photoelectric conversion layer provided between said upper electrode and said lower electrode;

an insulation film provided over said upper electrode; and

a pixel electrode provided over said insulation film and connected with one of a source region and a drain region of said transistor;

wherein said pixel electrode overlaps with said upper electrode with said insulation film therebetween to provide a capacitance.

11. (Previously Presented) An apparatus according to claim 10, wherein a reflecting material and a light-transmitting material are used for a pixel electrode of each of said pixel portions.

12. (Withdrawn) A semiconductor device comprising:

a pixel portion comprising a first active device and a pixel electrode over a substrate;

a sensor portion comprising a second active device and provided over said substrate and comprising a photo-electric conversion device;

a pixel gate signal line side driver circuit for driving the first active device; and

a driver circuit for driving the second active device,

wherein said active device and said pixel electrode and said photo-electric conversion device are provided in one of pixels arranged in matrix,

wherein said pixel electrode comprises a first layer and a second layer, said second layer provided over said first layer,

wherein one of said first layer and said second layer of said pixel electrode comprises a reflecting material,

wherein the other of said first layer and said second layer of said pixel electrode comprises a light-transmitting material, and

wherein said sensor portion can read information by utilizing the rays of light transmitting through said light-transmitting material when an external image is read.

13. (Withdrawn) An apparatus according to claim 12, wherein at least one of said first active device and said second active device comprises a bottom gate type TFT.

14. (Withdrawn) An apparatus according to claim 12, wherein at least one of said first active device and said second active device comprises a top gate type TFT.

15. (Withdrawn) A semiconductor device comprising:
a first substrate and a second substrate opposed to said first substrate;
a pixel portion comprising a first active device and a pixel electrode over said first substrate;

a sensor portion comprising a second active device and provided over said second substrate and comprising a photo-electric conversion device;

a pixel gate signal line side driver circuit for driving the first active device; and

a driver circuit for driving the second active device,

wherein said active device and said pixel electrode and said photo-electric conversion device are provided in one of pixels arranged in matrix,

wherein said pixel electrode comprises a first layer and a second layer, said second layer provided over said first layer,

wherein one of said first layer and said second layer of said pixel electrode comprises a reflecting material,

wherein the other of said first layer and said second layer of said pixel electrode comprises a light-transmitting material, and

wherein said sensor portion can read information by utilizing the rays of light transmitting through said light-transmitting material when an external image is read.

16. (Withdrawn) An apparatus according to claim 15, wherein color filters are disposed on said second substrate.

17. (Withdrawn) An apparatus according to claim 15, wherein at least one of said first active device and said second active device comprises a bottom gate type TFT.

18. (Withdrawn) An apparatus according to claim 15, wherein at least one of said first active device and said second active device comprises a top gate type TFT.

19. (Withdrawn) A semiconductor device comprising:

a pixel portion comprising a first active device and a pixel electrode over a substrate;

a sensor portion comprising a second active device and provided over said substrate and having a photo-electric conversion device;

a pixel gate signal line side driver circuit for driving the first active device; and

a driver circuit for driving the second active device,

wherein said active device and said pixel electrode and said photo-electric conversion device are provided in one of pixels arranged in matrix, and

wherein at least a part of said photo-electric conversion device is extended in such a manner as to overlap with said active device,

wherein a plane parallel to a direction of said matrix is divided into at least a first display region and a second display region in said pixel electrode,

wherein said pixel electrode comprises a first layer and a second layer, said second layer provided over said first layer,

wherein one of said first layer and said second layer of said pixel electrode comprises a reflecting material, and

wherein the other of said first layer and said second layer of said pixel electrode comprises a light-transmitting material.

20. (Withdrawn) An apparatus according to claim 18, wherein at least one of said first active device and said second active device comprises a top gate type TFT.

21. (Previously Presented) A semiconductor device comprising:
a pixel portion comprising a transistor provided over a substrate; and
a sensor portion provided over said substrate and comprising an upper electrode and a lower electrode and a photoelectric conversion layer provided between said upper electrode and said lower electrode;
an insulation film provided over said upper electrode; and
a pixel electrode provided over said insulation film and connected with one of a source region and a drain region of said transistor;
wherein said pixel electrode overlaps with said upper electrode with said insulation film therebetween to provide a capacitance.

22. (Original) An apparatus according to claim 21, wherein a reflecting material and a light-transmitting material are used for a pixel electrode of said pixel portion.

23.-28. (Canceled)

29. (Withdrawn) A device according to claim 1 wherein said pixel electrode has an image display function.

30. (Withdrawn) A device according to claim 4 wherein said pixel electrode has an image display function.

31. (Withdrawn) A device according to claim 8 wherein said pixel electrode has an image display function.

32. (Withdrawn) A device according to claim 12 wherein said pixel electrode has an image display function.

33. (Withdrawn) A device according to claim 15 wherein said pixel electrode has an image display function.

34. (Withdrawn) A device according to claim 19 wherein said pixel electrode has an image display function.

35.-37. (Canceled)

38. (Currently Amended) A display device comprising:

a plurality of pixel portions each comprising an active device and arranged in matrix and each having a pixel electrode over a substrate; [[and]]

a plurality of sensor portions arranged in matrix over said substrate;

a source signal line side driving circuit for controlling the pixel portions;

a gate signal line side driving circuit for controlling the pixel portions; and

a driving circuit for controlling the sensor portions,

wherein said pixel electrode comprises a first layer and a second layer, said second layer provided over said first layer so as to overlap a portion of said first layer while another portion of said first layer is not covered by said first layer,

wherein one of said first layer and said second layer of said pixel electrode comprises a reflecting material,

wherein the other of said first layer and said second layer of said pixel electrode comprises a light-transmitting material, and

wherein each of said sensor portions includes a photo-electric conversion device,
~~and can read information by utilizing the rays of light transmitting through said light-transmitting material when an external image is read.~~

39. (Currently Amended) A display device comprising:

a plurality of pixel portions each comprising an active device and arranged in matrix and each having a pixel electrode over a first substrate; [[and]]

a plurality of sensor portions disposed in matrix over a second substrate opposed to said first substrate;

a source signal line side driving circuit for controlling the pixel portions;

a gate signal line side driving circuit for controlling the pixel portions; and

a driving circuit for controlling the sensor portions,

wherein said pixel electrode comprises a first layer and a second layer, said second layer provided over said first layer so as to overlap a portion of said first layer while another portion of said first layer is not covered by said first layer,

wherein one of said first layer and said second layer of said pixel electrode comprises a reflecting material,

wherein the other of said first layer and said second layer of said pixel electrode comprises a light-transmitting material, and

wherein each of said sensor portions has a photo-electric conversion device, ~~and can read information by utilizing the rays of light transmitting through said light-transmitting material when an external image is read.~~

40. (Currently Amended) A display device comprising:

a plurality of pixel portions each comprising an active device and arranged in matrix and each having a pixel electrode over a substrate; [[and]]

a plurality of sensor portions arranged in matrix over said substrate, wherein each of said sensor portions has a photo-electric conversion device, and at least a part of said photo-electric conversion device is extended in such a manner as to overlap with said active device;

a source signal line side driving circuit for controlling the pixel portions;

a gate signal line side driving circuit for controlling the pixel portions; and
a driving circuit for controlling the sensor portions,

wherein said pixel electrode comprises a first layer and a second layer, said second layer provided over said first layer so as to overlap a portion of said first layer while another portion of said first layer is not covered by said first layer,

wherein one of said first layer and said second layer of said pixel electrode comprises a reflecting material, and

wherein the other of said first layer and said second layer of said pixel electrode comprises a light-transmitting material.

41. (Currently Amended) A semiconductor device comprising:

a pixel portion comprising an active device and a pixel electrode over a substrate; [[and]]

a sensor portion provided over said substrate and comprising a photo-electric conversion device;

a source signal line side driving circuit for controlling the pixel portions;
a gate signal line side driving circuit for controlling the pixel portions; and
a driving circuit for controlling the sensor portions,

wherein said active device and said pixel electrode and said photo-electric conversion device are provided in one of pixels arranged in matrix,

wherein said pixel electrode comprises a first layer and a second layer, said second layer provided over said first layer so as to overlap a portion of said first layer while another portion of said first layer is not covered by said first layer,

wherein one of said first layer and said second layer of said pixel electrode comprises a reflecting material,

wherein the other of said first layer and said second layer of said pixel electrode comprises a light-transmitting material, ~~and~~

~~wherein said sensor portion can read information by utilizing the rays of light transmitting through said light transmitting material when an external image is read.~~

42. (Currently Amended) A semiconductor device comprising:
a first substrate and a second substrate opposed to said first substrate;
a pixel portion comprising an active device and a pixel electrode over said first substrate; [[and]]

a sensor portion provided over said second substrate and comprising a photo-electric conversion device;

a source signal line side driving circuit for controlling the pixel portions;

a gate signal line side driving circuit for controlling the pixel portions; and

a driving circuit for controlling the sensor portions,

wherein said active device and said pixel electrode and said photo-electric conversion device are provided in one of pixels arranged in matrix,

wherein said pixel electrode comprises a first layer and a second layer, said second layer provided over said first layer so as to overlap a portion of said first layer while another portion of said first layer is not covered by said first layer,

wherein one of said first layer and said second layer of said pixel electrode comprises a reflecting material,

wherein the other of said first layer and said second layer of said pixel electrode comprises a light-transmitting material, ~~and~~

~~wherein said sensor portion can read information by utilizing the rays of light transmitting through said light transmitting material when an external image is read.~~

43. (Currently Amended) A semiconductor device comprising:
a pixel portion comprising an active device and a pixel electrode over a substrate; [[and]]

a sensor portion provided over said substrate and having a photo-electric conversion device;

a source signal line side driving circuit for controlling the pixel portions;

a gate signal line side driving circuit for controlling the pixel portions; and

a driving circuit for controlling the sensor portions,

wherein said active device and said pixel electrode and said photo-electric conversion device are provided in one of pixels arranged in matrix, and

wherein at least a part of said photo-electric conversion device is extended in such a manner as to overlap with said active device,

wherein a plane parallel to a direction of said matrix is divided into at least a first display region and a second display region in said pixel electrode,

wherein said pixel electrode comprises a first layer and a second layer, said second layer provided over said first layer so as to overlap a portion of said first layer while another portion of said first layer is not covered by said first layer,

wherein one of said first layer and said second layer of said pixel electrode comprises a reflecting material, and

wherein the other of said first layer and said second layer of said pixel electrode comprises a light-transmitting material.

44. (Previously Presented) An apparatus according to claim 38, wherein said active device comprises a bottom gate type TFT.

45. (Previously Presented) An apparatus according to claim 38, wherein said active device comprises a top gate type TFT.

46. (Previously Presented) An apparatus according to claim 39, wherein said active device comprises a bottom gate type TFT.

47. (Previously Presented) An apparatus according to claim 39, wherein said active device comprises a top gate type TFT.

48. (Previously Presented) An apparatus according to claim 39, wherein color filters are disposed on said second substrate.

49. (Previously Presented) An apparatus according to claim 40, wherein said active device comprises a top gate type TFT.

50. (Previously Presented) An apparatus according to claim 41, wherein said active device comprises a bottom gate type TFT.

51. (Previously Presented) An apparatus according to claim 41, wherein said active device comprises a top gate type TFT.

52. (Previously Presented) An apparatus according to claim 42, wherein said active device comprises a bottom gate type TFT.

53. (Previously Presented) An apparatus according to claim 42, wherein said active device comprises a top gate type TFT.

54. (Previously Presented) An apparatus according to claim 42, wherein color filters are disposed on said second substrate.

55. (Previously Presented) An apparatus according to claim 43, wherein said active device comprises a top gate type TFT.

56. (Previously Presented) A device according to claim 38, wherein said pixel electrode has an image display function.

57. (Previously Presented) A device according to claim 39, wherein said pixel electrode has an image display function.

58. (Previously Presented) A device according to claim 40, wherein said pixel electrode has an image display function.

59. (Previously Presented) A device according to claim 41, wherein said pixel electrode has an image display function.

60. (Previously Presented) A device according to claim 42, wherein said pixel electrode has an image display function.

61. (Previously Presented) A device according to claim 43, wherein said pixel electrode has an image display function.

62. (New) A device according to claim 38, wherein the driving circuit for controlling the sensor portions is a sensor horizontal driving circuit or a sensor vertical driving circuit.

63. (New) A device according to claim 39, wherein the driving circuit for controlling the sensor portions is a sensor horizontal driving circuit or a sensor vertical driving circuit.

64. (New) A device according to claim 40, wherein the driving circuit for controlling the sensor portions is a sensor horizontal driving circuit or a sensor vertical driving circuit.

65. (New) A device according to claim 41, wherein the driving circuit for controlling the sensor portions is a sensor horizontal driving circuit or a sensor vertical driving circuit.

66. (New) A device according to claim 42, wherein the driving circuit for controlling the sensor portions is a sensor horizontal driving circuit or a sensor vertical driving circuit.

67. (New) A device according to claim 43, wherein the driving circuit for controlling the sensor portions is a sensor horizontal driving circuit or a sensor vertical driving circuit.